

## CLAIMS

What is claimed is:

1. In a wireless communication system wherein wireless communications between communication stations includes the transmission of a composite channel on which a plurality of channels are multiplexed, wherein an error rate measurement is performed on received signals on a reference channel selected from the plurality of multiplexed channels for use in selectively controlling transmission of the composite channel, a method comprising:

selecting a channel from the plurality of multiplexed channels as the reference channel initially used for error rate measurement;

monitoring the reference channel based on a quantitative data content criteria to determine an ON state when the quantitative data content criteria is met and an OFF state when the quantitative data content criteria is not met; and

when monitoring of the reference channel reflects an OFF state, selecting a different channel from the plurality of multiplexed channels as the reference channel.

2. The method of claim 1 wherein the channels are transport channels (TrCHs) and the reference channel is a reference transport channel (RTrCH), each TrCH has a transport time interval (TTI) of a given size of which a largest TTI size is an integer multiple, the TrCHs are multiplexed on a coded composite transport channel (CCTrCH), a block error rate measurement is performed on the RTrCH, and monitoring of the RTrCH is performed at a time interval corresponding to the TTI size of the RTrCH.

3. The method of claim 2 wherein the TrCHs each have a block error rate (BLER) requirement and a TrCH having a least restrictive BLER requirement is selected as the RTrCH initially used for error rate measurement.

4. The method of claim 3 wherein there are N number of TrCHs multiplexed onto the CCTrCH, the TrCHs are assigned a preference level for selection, first through N<sup>th</sup>, the first preference level being highest, the preference level based first on the BLER requirement and then on TTI size, such that the first TrCH has a least restrictive BLER requirement and a smallest TTI size among TrCHs having the same BLER requirement, and the N<sup>th</sup> TrCH has a most restrictive BLER requirement and a largest TTI size among TrCHs having the same BLER requirement, and the first TrCH is selected as the RTrCH initially used for error rate measurement.

5. The method of claim 4 wherein when the first TrCH is selected as the RTrCH and monitoring of the first TrCH channel reflects an OFF state, the second TrCH is then selected as the RTrCH.

6. The method of claim 4 wherein when an i<sup>th</sup> TrCH is selected as the RTrCH, where i is less than N, and monitoring of the i<sup>th</sup> TrCH channel reflects an OFF state, a different TrCH is then selected as the RTrCH from among the group of channels consisting of the first TrCH through the (i+1)<sup>th</sup> TrCH.

7. The method of claim 6 wherein when the i<sup>th</sup> TrCH is selected as the RTrCH, the first through the i<sup>th</sup> TrCHs are each monitored based on a quantitative data content criteria to determine an ON state when the quantitative data content criteria is met and an OFF state when the quantitative data content criteria is not met and when monitoring of the i<sup>th</sup> TrCH channel, such that if any TrCH with a preference level higher than the RTrCH is determined to be in an ON state, a TrCH that is determined to be in an ON state with highest preference level is then selected as the reselected RTrCH.

8. The method of claim 7 wherein monitoring of a TrCH is performed no less than once during each time interval corresponding to the TTI size of the TrCH.

9. The method of claim 7 wherein the determining when a TrCH is in an OFF state includes determining that data was not received on the TrCH for a predetermined number of consecutive TTIs of the TrCH.

10. The method of claim 7 wherein the determining when TrCH is in an ON state includes determining that data was received on the TrCH in at least one of a predetermined number of TTIs of the TrCH.

11. The method of claim 2 wherein a TrCH having the largest TTI size defines TTI boundaries based on that largest size for all TrCHs and the selecting a different TrCH from the plurality of multiplexed TrCH as the RTrCH becomes effective at one of such defined TTI boundaries.

12. The method of claim 2 wherein monitoring of the RTrCH is performed only upon data detection on any TrCH.

13. The method of claim 2 wherein the determining when RTrCH is in an OFF state includes determining that data was not received on the RTrCH for a predetermined number of consecutive TTIs of the RTrCH.

14. The method of claim 2 wherein the determining when RTrCH is in an ON state includes determining that data was received on the RTrCH in at least one of a predetermined number of TTIs of the RTrCH.

15. A receiver for a communication station for use in a wireless communication system wherein wireless communications between communication

stations includes the transmission of a composite channel on which a plurality of channels are multiplexed, wherein an error rate measurement is performed on received signals on a reference channel selected from the plurality of multiplexed channels for use in selectively controlling transmission of the composite channel, the receiver comprising:

- composite channel received signal processing circuitry including:

  - error measurement circuitry configured to perform an error rate measurement on received signals on a selected reference channel of the composite channel;

  - monitoring circuitry configured to monitor the selected reference channel based on a quantitative data content criteria to determine an ON state when the quantitative data content criteria is met and an OFF state when the quantitative data content criteria is not met; and

  - reference channel selection circuitry configured to be responsive to said monitoring circuitry such that when monitoring of the reference channel reflects an OFF state, the reference channel selection circuitry selects a different channel from the plurality of multiplexed channels as the reference channel for said error measurement circuitry and said monitoring circuitry.

16. The invention of claim 15 wherein the channels are transport channels (TrCHs) and the reference channel is a reference transport channel (RTrCH), each TrCH has a Transport Time Interval (TTI) of a given size of which a largest TTI size is an integer multiple, the TrCHs are multiplexed on a coded composite transport channel (CCTrCH) and said error measurement circuitry is configured to perform a block error rate measurement on the RTrCH, and said monitoring circuitry is configured to monitor the RTrCH no less than once during each time interval corresponding to the TTI size of the RTrCH.

17. The invention of claim 16 wherein the TrCHs each have a block error rate (BLER) requirement and said reference channel selection circuitry is configured with a TrCH having a least restrictive BLER requirement as the default TrCH selection initially used as the RTrCH.

18. The invention of claim 17 wherein there are N number of TrCHs multiplexed onto the CCTrCH, and said reference channel selection circuitry is configured to assign a preference level for selection to the TrCHs, first through N<sup>th</sup>, the first preference level being highest, based first on their BLER requirement and then on TTI size such that the first TrCH has a least restrictive BLER requirement and a smallest TTI size among TrCHs having the same BLER requirement, and the N<sup>th</sup> TrCH has a most restrictive BLER requirement and a largest TTI size among TrCHs having the same BLER requirement, and the first TrCH is selected as the RTrCH initially used for error rate measurement.

19. The invention of claim 18 wherein said reference channel selection circuitry is configured such that when the first TrCH is selected as the RTrCH and monitoring of the first TrCH channel reflects an OFF state, the second TrCH is then selected as the reselected RTrCH.

20. The invention of claim 18 wherein said reference channel selection circuitry is configured such that when an i<sup>th</sup> TrCH is selected as the RTrCH, where i is less than N, and monitoring of the i<sup>th</sup> TrCH channel reflects an OFF state, a different TrCH is then selected as the reselected RTrCH from among the group of channels consisting of the first TrCH through the (i+1)<sup>th</sup> TrCH.

21. The invention of claim 20 wherein said monitoring circuitry is configured such that when an i<sup>th</sup> TrCH is selected as the RTrCH, where i is less than N, the first through the i<sup>th</sup> TrCHs are each monitored based on quantitative

data content criteria to determine an ON state when the quantitative data content criteria is met and an OFF state when the quantitative data content criteria is not met, and said reference channel selection circuitry is configured such that if any TrCH with a preference level higher than the RTrCH is determined to be in an ON state, a TrCH that is determined to be in an ON state with highest preference level is then selected as the reselected RTrCH.

22. The invention of claim 21 wherein said monitoring circuitry is configured such that monitoring of a TrCH is performed no less than once during each time interval corresponding to the TTI size of the TrCH.

23. The invention of claim 21 wherein said monitoring circuitry is configured such that the determining when a TrCH is in an OFF state includes determining that data was not received on the TrCH for a predetermined number of consecutive TTIs of the TrCH.

24. The invention of claim 21 wherein said monitoring circuitry is configured such that the determining when TrCH is in an ON state includes determining that data was received on the TrCH in at least one of a predetermined number of consecutive TTIs of the TrCH.

25. The invention of claim 16 wherein a TrCH having the largest TTI size defines TTI boundaries based on that largest size for all TrCHs and said reference channel selection circuitry is configured such that the selecting a different TrCH from the plurality of multiplexed TrCH as the RTrCH becomes effective at one of such defined TTI boundaries.

26. The invention of claim 16 wherein said monitoring circuitry is configured such that monitoring of the RTrCH is performed no less than once during each time interval corresponding to the TTI size of the RTrCH.

27. The invention of claim 16 wherein said monitoring circuitry is configured such that the determining when RTrCH is in an OFF state includes determining that data was not received on the RTrCH for a predetermined number of consecutive TTIs of the RTrCH.

28. The invention of claim 16 wherein said monitoring circuitry is configured such that the determining when RTrCH is in an ON state includes determining that data was received on the RTrCH in at least one of a predetermined number of consecutive TTIs of the RTrCH.

29. The invention of claim 16 wherein said monitoring circuitry is configured such that monitoring of the RTrCH is performed only upon data detection on any TrCH.

30. A base station for a 3GPP system including the receiver according to claim 16.

31. A wireless transmit/receive unit for a 3GPP system including the receiver according to claim 16.

32. A base station including the receiver according to claim 15.

33. A wireless transmit/receive unit including the receiver according to claim 15.